PERSONAL INFORMATION MANAGEMENT: THE INFORMATION COMPANION

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Abstract

Adapting to the needs of the millennium generation student in a rapidly changing information society confronts our educational system with new challenges. During the learning process, students become more and more responsible for the management of there own information processes. After their graduation, the job market expects them to function as mobile knowledge-workers. It is therefore vital that students acquire the right attitudes and skills in order to survive in this information society. This implies that they learn the skills necessary to deal with the ceaseless information flood and to manage the information that was gathered. On the other hand they must be made aware of the digital footsteps their private, academic and professional activities leave and that they are capable of controlling this digital trace.

These issues go beyond the limits of courses or institutions. In many fields, teachers are confronted with students who notably lack the necessary skills. However, due to the specialization of the education it is difficult to include the required training in the conventional curriculum.

At the Catholic University of Leuven (K.U.Leuven) and its associated institutes for higher education we have initiated a multidisciplinary effort to develop tools for the students to acquire the essential skills to improve their personal information management. This implies not only a wide range of practical competences, but also more conceptual skills, and more importantly, a consistent attitude, which are necessary in their educational careers and later in their professional life. It is a common misunderstanding that these computer-related skills are only relevant at a basic level. Quite on the contrary, our research aims to show how deep this relates to the development of a professional profile and identity.

Our project has one main strategic goal and two operational goals. Our strategic goal is to make the students more aware of the need for adequate information skills, and learn that it is their own responsibility to upscale their competences where and when required. In order to achieve this goal, we are working towards two operational goals. The first operational goal is to implement a community where existing information, projects and experience from teachers and institutes throughout our association can be consolidated. This provides a single point of contact for the student about information skills: http://www.informatiewijzer.be. Our second operational goal is to develop tools such as tests, information leaflets, learning objects and news articles, which may help the students to train on these competences.

The resulting Information Companion - now actively integrated in our learning system serving 75000+ students on a daily basis - is a website that has three parts: a blog on daily life ICT problems containing both student posts that are moderated and corrected by staff members as well as posts by experts; a structured personal information guide to which blog posts link through tags, and a self-test for students to assess their awareness, also linked to the information guide. In this contribution, we describe the results of a very large survey we performed with students (>7000 respondents). We look into specific gender differences and bachelor/master differences and do some evidence-based suggestions for adaptive remedy policies for universities.

Keywords: ICT skills, competencies, e-learning, information management, gender issues.

1 THE ACADEMIC NICHE OF COMPUTER SKILLS

Adapting to the needs of a student of the millennium generation [1][2] in a rapidly changing information society, confronts our educational system with new challenges [3]. During the learning process, students become more and more responsible for the management of their own information processes. After their graduation, the job market expects them to function as mobile knowledge-workers. It is therefore vital that students acquire the right attitudes and skills in order to survive in this information society [4][5]. This implies that they learn the skills necessary to deal with the ceaseless information flood, and to manage the information that was gathered. On the other hand they must be made aware of the digital footsteps their private, academic and professional activities leave and that they are capable of controlling this digital trace.

In many fields, teachers are confronted with students who notably lack the necessary skills. However, due to the specialization of the education it is difficult to include the required training in the conventional curriculum. Education in basic computer skills has disappeared from most University curricula.

At the Catholic University of Leuven (K.U.Leuven) [6] and its associated institutes for higher education we have initiated a multidisciplinary effort to develop tools for the students to acquire the essential skills to improve their personal information management. This implies not only a wide range of practical competences, but also more conceptual skills, and more importantly, a consistent attitude, which are necessary in their educational careers and later in their professional life.

It is a common misunderstanding that these computer-related skills are only relevant at a basic level. Quite on the contrary, our research aims to show how deep this relates to the development of a professional profile and identity. These skills and awareness's are something that can only be learned during the whole path of higher education, where students will gather a hopefully structured amount of knowledge in particular domains, and externalize this on their computers, other devices and the internet.

The main goal of our project is to make the students more aware of the need for adequate information skills, and to learn them that it is their own responsibility to upscale their competences where and when required. In order to achieve this goal, we are working towards the implementation of a community where existing information, projects and experience from teachers and institutes throughout our association can be consolidated. This provides a single point of contact for the student about information skills: http://www.informatiewijzer.be additionally, we wish to develop tools such as tests, information leaflets, learning objects and news articles, which may help the students to train on these competences.

2 THE INFORMATION COMPANION

The purpose of the Information Companion [7] is to give the students a handy tool that will enable them to deal with the numerous aspects of their personal information management. The format in which this guide shall be distributed, will most likely be a USB-stick containing all relevant information as well as a test to check the personal skills of the student. Through this test, the students are familiarized with this complex matter and its importance for their personal life.

The companion consists of three parts: a digital handbook, a blog and a self-test. The handbook is a classical course that discusses three themes: Information- and document management, personal communications and virtual identity and rights.

In the section on information- and document management, topics like document types and architecture of electronic documents are covered, but of course aspects of organizing information, including version control, backup, storage, archiving are discussed in great detail. Also in this section internet basic, cloud computing (from an end-user perspective) as well as security issues are presented.

The section on personal communication handles e-mail, web 2.0, chat, forums and other daily communication instruments on the web. The third section then focuses more on a higher level of use of the web, where students are encouraged to fully understand how they can use the web to develop their personal online profile, and become more sensitive for privacy issues and the rights of other people on the web. A last part of this section covers mobile computing, with management issues regarding Laptop, smartphone, memory sticks and similar personalized devices.

The blog relies on contributions of the network of teaching staff from the various Association institutions involved in the project, but also on student contributions and expert blog authors with ties to the field. Extra personnel is hired to review the blogs and to add to the blogs systematic links to relevant sections in the handbook. This way the handbook and the blogs form an integrated whole that is constantly updated and up-to-date.

The self test is a short test that students can go through, where questions are raised that invite reflection and improve awareness. Rather than giving true/false answers, the student is linked to relevant sections of the handbook depending on his/her answers. For real training and evaluation purposes, member institutions use adapted variants of this test questionnaire.

3 THE STUDENT CURRICULUM

Trust and responsibility are important notions in professional activity. Being able to trust someone else's competences is one of the reasons the scholarly system leads to degrees and certificates. A degree shows you that a person has reached a certified minimal required level of competence in a certain field, so that you can entrust him or her with tasks others will depend on. Formal learning strongly focuses on this requirement.

Of course, degrees are not the only element of proof taken into consideration when assessing whether someone is "fit for the job". The personal pedigree and the social network that someone has build can be valuable indicators. A lot of valid, socially accepted knowledge is obtained through informal learning, in social contacts or on the job. More and more, people tend to professionalize their hobbies into added competences that can be of value for their professional career.

The trail of past activities one carries along is kept increasingly in digital form: papers, articles, blog posts a candidate has written, his or her presence on social websites, maybe even in the more formal context of a true electronic portfolio: it all helps to add credentials to someone as employable for a certain set of tasks.

Besides the intricate relationship between knowledge and professional activity - and as a consequence with continuous learning - it is reasonable to claim that the expertise that someone builds within his social network is an inextricable part of his personal development. In the same way the virtual personality that emerges from the multitude of online activities someone deploys can be an important part of his or her personality as a whole. It is difficult to separate personal and professional development, whether in real life or online, and it is our feeling that institutions devoted to learning should take that issue with due attention and care [8].

4 RESPONSIBILITY FOR KNOWLEDGE

First, the student has to get the basics right. Managing his or her own files and information cannot be a problem and is solely and entirely their full responsibility. First-year students need to be told this clearly. Of course, their high school preparatory study should have learned them the necessary skills, but taking responsibility is definitely something new here.

Second, the student should learn that what you file properly in the first place, has less chance to get lost. They really need to get a responsible attitude towards the information that reaches them. Learning to use personal information databases and social websites can help to survive the information glut.

Third, and this requires more maturity, the student should learn how to manage his or her own electronic personality and profile. Who am I, professionally speaking? What is the image people have of me online? How can people assess what I know and what efforts I do to stay on top of my "knowledge area of responsibility" [9]?

Just like a degree vindicates a continued effort, over a certain period of time which can be several years, a web-presence can document an informal but continued persistence in pursuing certain cognitive goals. It can show one's involvement in relevant social groups and institutions. It shows what the French call "a pied à terre", a strong foothold in a certain field of activities.

Besides this "presential" effort, it is also important to consolidate the memory one keeps of activities. A memory is not a passive thing. It needs to be kept alive, and doing so it transforms. A memory is in many ways a social construction. People should cultivate and manage their memories, so that it becomes a consistent path. Of course, there will be many times one was lead astray, or when a

decisive rupture has occurred. Maybe you started your studies with a degree in Philosophy, to become an engineer later on. Maybe, or maybe not, the former has a meaning to the latter. Anyway, it is up to the knowledge professional to develop an honest story about his or her professional an intellectual past.

5 EDUCATIONAL USE

The Leuven University Association involves 13 institutions for higher education, geographically dispersed throughout the Flanders Region. Some of them provide academic education, quite a few offer professional education. The Association wants to stimulate students to go from one institution to another during their study. One visible tool to achieve a common feeling is the common digital Learning platform or CDLP, a common learning space for all students, however allowing institutional "branding" at the front-end level. This common platform, used by students from the first day they start their study at the Association, enforces a common level of required computer skills.

The information companion is meant to provide a common basis for Association students - these students are involved in very, very different disciplines ranging from nursing to Japanese literature - not only in the early stages of their study: sharing basic understanding of information management - but also during and towards the end of their study career, when higher level skills such as maintaining a web identity are addressed. We want to make sure that graduates from our Association are information-skilled workers who can seamlessly integrate with the work ethics of our digital age.

The content is delivered extra-curricular, and so a sensibilisation campaign is run to motivate study programme committees to integrate this material in the student's roadmap.

An example use is currently pioneered by the first-year students in engineering, who make an exercise on the information companion in the context on a course on information tools. The exercise involved several steps. In a first stage, students write articles on current subjects involving personal computing, like backup and security. These are reviewed by research assistants and then the 15 best articles are published on the Information Companion blog. This way there is an incentive for students to write high quality contributions. In a second stage students will edit and improve articles on technical ICT issues on the Dutch version of Wikipedia, and write a short blog post with a link to the newly edited Wikipedia article. Again, both the Wikipedia contributions and the blog posts are reviewed by research assistants. This way the students contribute to a larger audience and contribute to the information quality available on the internet. This aspect of our Open policies is highly appreciated and motivating.

6 SURVEY

To have a good grasp of the opportunities to act on these problems and have a real impact on the 75,000+ students at the K.U.Leuven Association, we performed a large survey during the academic year 2007-2008. More than 7,000 students participated in the online survey, involving questions on several aspects of information literacy [10].

With such a large number of respondents, it is possible to have good random samples for each of the relevant stratifications. Here, we focus on the most striking results that can be obtained at face value. It is our intention to publish a more in-depth statistical analysis in a follow-on publication.

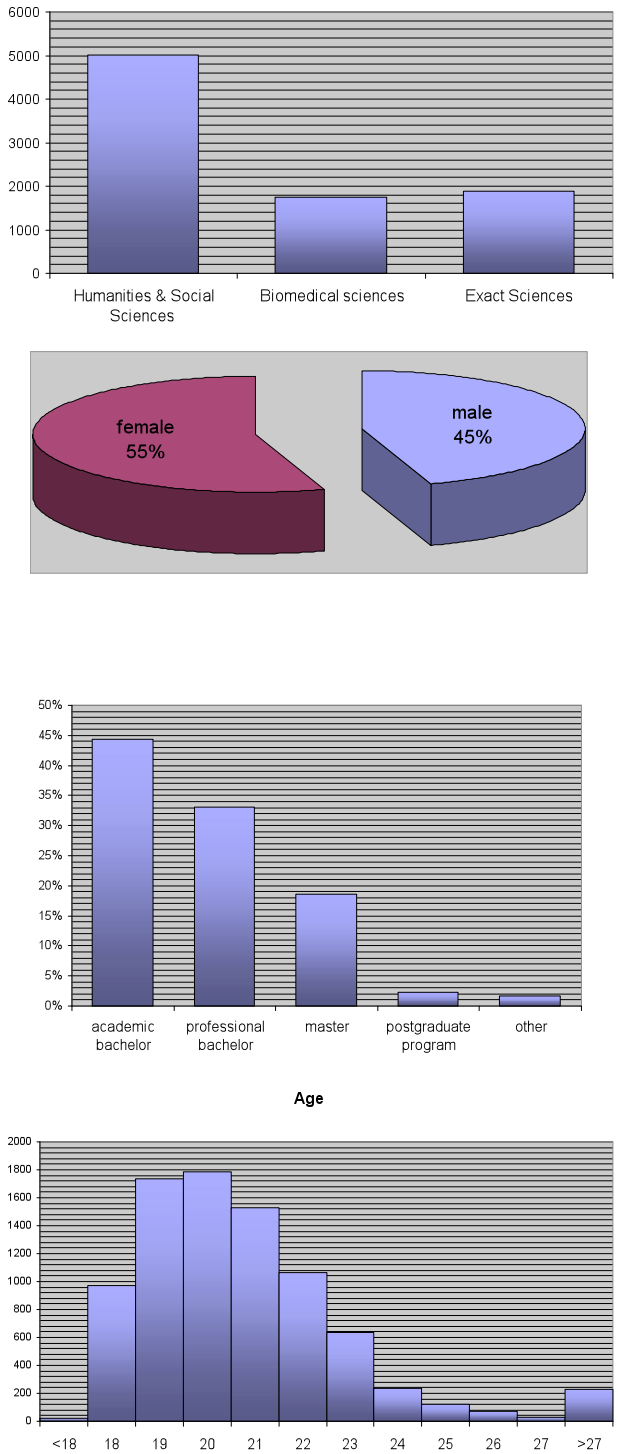

Fig. 1: Respondent composition

A first example is a technical question, "*I know what a codec is*", which provides quite a split, typically bi-modal question. About half of the respondents do not know what a Codec (Coder-Decoder) is. Not that they really need to. On the other hand, this shows some very basic concepts about digitization are not shared by the digital crowd. Not knowing about Codecs also means that one cannot have a correct view on important conceptual issues like representation and communication. Our students will be sharing digital information more and more over the internet, in their personal, professional and academic life, and concepts such as file formats or codecs will be important to share video fragments, audio pieces, but also text documents or pictures. How often do we see students failing to understand which aspects influence the file size of a digital image, making it impossible for them to share it with their teachers, friends or colleagues?

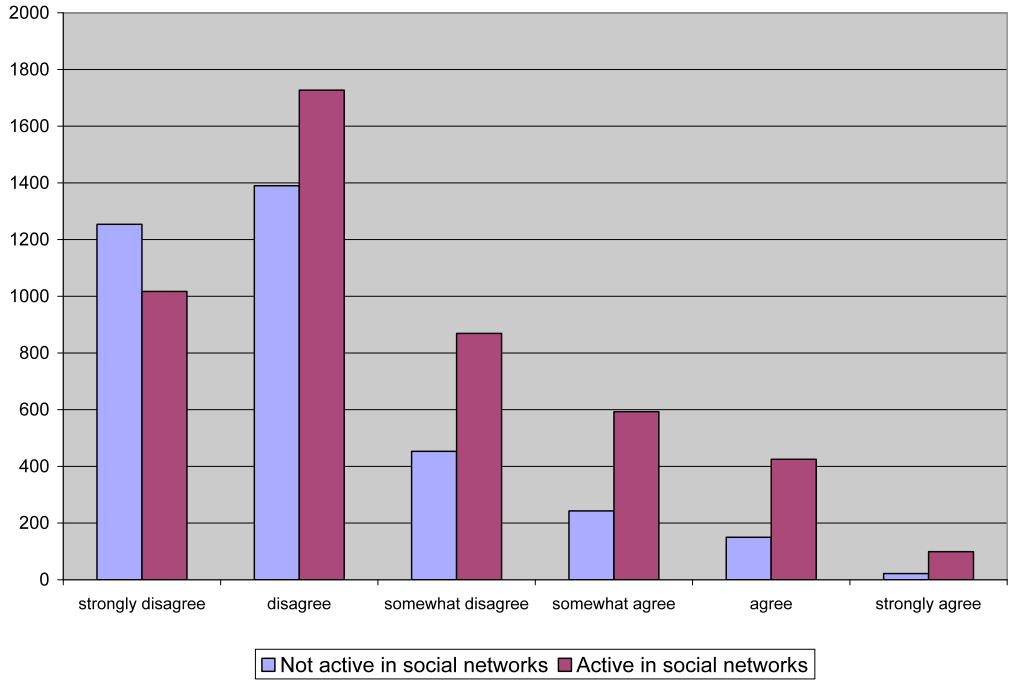

Fig. 2: 'In order to secure my pictures, I upload them online' – compared to 'I am an active member of a social network'

Even though the use of web 2.0 technologies has become mainstream, people do not yet feel that the web can be a real home to their data. We aim to make students more sensitive to 'cloud computing' technologies, where the internet itself is the home of diverse files, or even digital identities (professional or personal).

Next to these technical issues, we also probed knowledge and skills on intellectual property rights. As more and more (young and not so young) people put information online (media, music, movies, documents, polls…), it will be important for our students to understand not only their rights but also their responsibilities. We asked our respondents if they were familiar with Creative Commons, and it turns out that their knowledge about more innovative licensing schemes is alarmingly low. We feel this to be an important issue in preparing a future generation to develop a true innovative internet economy and hope to stimulate this through our project.

It is clear that web 2.0 has swiftly conquered our target group. More than 50% of the respondents answered positively to this question. This is important information for university policy towards e-learning. The Leuven association already provides in a fully integrated wiki- and blog-service that teachers can integrate into their Blackboard e-learning environment, it is clear we should and can do more about tapping into students' competences in this field.

We also aim to make students more aware of their digital identities, and especially on the information they put online (both personal and professional/academic). When asked whether or not their name would come up in a Google search performed by a potential employer, the answers are very diverse. It is clear that a large group cannot be found online, but a larger group has an apparent online identity, coupled to their (real life) name. It is our opinion that digital identities are complex issues, but this should not be an excuse for not thinking about these issues in a strategic manner. Any student should realize that employers more and more Google possible employees, and appearing in the search result in a bad way is only marginally worse than not appearing at all (which may show a potential employer a lack of creativity or a lack of a professional online identity).

In our investigation, we also added gender as a possible significant determinant of perceived computer literacy. Because of the potential effect of computer experience, we asked respondents to indicate their level of computer usage and the extent of their interactions with the internet. In particular, we asked them whether they use computers frequently, to what degree they post messages on the internet, to what extent they are an active member of social networks (like Facebook, LinkedIn, etc.) and to what degree they deploy several online identities.

The results show a clear pattern in both the global scale and the subscales: male students report a significant higher degree of perceived computer literacy. The differences are the biggest in the more technically-oriented subscales “multimedia storage” and “security”. The difference is the slightest (but still significant) in “information retrieval”. This clear gender difference is also documented in Literature [11][12].

However, we should stress that these gender differences reflect self-assessments. As has been confirmed by the ICT lecturers participating in the information companion project, gender differences might decline when taking an actual computer literacy test, or when looking at exam results. Moreover, we also found an interaction effect, showing that the gender differences on the subscales internet risk awareness and legal knowledge, diminishes between students with higher computer experience.

In the literature, survey results often concern a limited number of respondents within a specific educational setting, targeting a homogenous cohort of students (for instance medical or business students of freshmen applicants). Because of the scope of our survey, aimed at various types of students in multiple faculties and educational programmes, we were able to investigate the impact of the study subject and the type of education (professional bachelor, academic bachelor or master) on computer literacy [13].

A professional bachelor is a three-year programme, not leading to an academic master. Contrary to an academic bachelor, it is known to be focused on more specialized and professional skills. Next to bachelors and masters, we used the category ‘others’ to represent students that are enrolled in various additional masters or specialization programmes. Some of those students already possess job experience.

Due to the vast number of study subjects, and corresponding to the classification used in the Association, we grouped them into 3 main study branches: exact sciences, medical sciences, and humanities. The branch humanities comprises several faculties and programmes, such as business economics, psychology, philosophy, linguistics and law. The branch exact sciences includes subjects related to engineering, mathematics and IT.

7 FOCUS GROUPS

The focus groups show strong gender differences on these issues. Although respondents to the focus group call are already preselected, it was clear that girls did not show an intrinsic interest in technology as such, and view it in a very pragmatic way as useful tools. They also expressed some concerns about social software environments like Facebook noticing that many fellow-students accept contacts arbitrarily, in order to assemble as many "friends" as possible. But this doesn't necessarily means that they feel the same concern regarding their personal privacy issues in social networks, as they "trust their friends in not publishing private information or data". As such, for them Facebook is used primarily as an extension of existing friendship relations, focusing on an inner circle of real life acquaintances.

The female respondents did not hold specific expectations towards technological advances as they do not think that new technological developments will bring on a revolution in scientific research or education. Preferring the use of available tools, they seemed very comfortable with them and even seem to prefer the more traditional educational and research tools such as libraries above technologically innovative tools.

The male respondents on the contrary did engage in discussions on what future technology should bring, and showed more willingness to take risks in this mater. They were also quite wary of uncritical use of social software. We can state that the participants of our focus groups perceive their virtual identity to be vulnerable and out of their hands, and as a result they seem to feel very little personal responsibility about the issue.

8 CONCLUSION

The respondent group shows a higher than expected self-confidence concerning document management skills. Also, social software has gained a solid foothold among students. The first observation runs contrary to the common belief held by participant teachers. Further study will need to assess whether this student self-confidence is justified.

There are, however several questions were there appears a wide divide between different groups within the respondents. This concerns e.g. basic safe guards and prudence in handling and storing of digital documents. In the same way there is a large group with clearly insufficient understanding of basic concepts about digital documents or digitization processes. It is also clear that the social web is not used to its full potential by the students: the underestimate the strategic benefit that this environment could offer them. Managing web identity in a conscious and strategic manner is generally lacking and we feel Higher Education could do more to help student acquire the necessary competences so that students develop a more mature and pro active attitude towards internet use. For these issues we propose actions at the institutional level that aim to bridge the gap between the different student groups and create an welcoming environment to foster web self-consciousness.

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